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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/974,571	10/09/2001	Peter G. Borden	M-11920 US	1003
34036	7590	06/15/2004		
SILICON VALLEY PATENT GROUP LLP 2350 MISSION COLLEGE BOULEVARD SUITE 360 SANTA CLARA, CA 95054				
			EXAMINER STOCK JR, GORDON J	
			ART UNIT 2877	PAPER NUMBER

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/974,571

Applicant(s)

BORDEN ET AL.

Examiner

Gordon J Stock

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 23-27 and 35-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22, 28-34 and 39-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 20040105; 20040223.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of **claims 1-22, 28-34, and 39-44** in the reply filed on May 19, 2004 is acknowledged.
2. **Claims 23-27 and 35-38** are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on May 19, 2004.

### *Drawings and Specification*

3. Specification is objected to for the following: on page 35 line 8 "(Fig. 18)" should read --(Fig. 1B)--; on page 17 lines 31-32 and on line 16 of page 19 "acts 112, 113 and 110" should read --acts 112, 113, and 111--. Corrections required.
3. The drawings and specification are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 103M, 105, 107, 108 of Fig. 1b; 170, 171, 172, 174, 175, 160, 161 of Fig. 2b; 140 of Fig. 2a; 90 of Fig. 1a. In addition, in Fig. 3c, 320 and 300 both point to the same component, the second measurement device. And Figure 7 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawing sheets, or amendment to the specification to add the reference character(s) in the description, are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct

Art Unit: 2877

any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Claims 1-10, 15-22, 44** rejected under 35 U.S.C. 102(e) as being anticipated by **Nikoonahad et al. (6,694,284)** in evidence of **Wang et al. (6,734,968)**.

As for **claims 1-3, 22, 44**, Nikoonahad discloses in a system for determining at least four properties of a specimen: making a first measurement at a first location with a first process; making a second measurement at a second location different from the first with a second measurement process different from the first; using a spectrometer (Figs. 5, 12, 27; col. 3, lines 18-43; col. 39, lines 45-67; col. 40, lines 1-2). As for combining the first and second measurements together to determine a property, Nikoonahad discloses that multiple measurement systems may be integrated together (col. 3, lines 18-43) and that data from a plurality of locations are correlated (col. 60, lines 20-65; col. 143, lines 50-60). In addition,

Art Unit: 2877

Wang in a system for analyzing surface characteristics states that locations are correlated together for two different measurement systems (col. 21, lines 25-34). Nikoonahad also discloses illuminating the sample with two monochromatic sources modulated at two frequencies with filtering reflected signals and that a four point probe will be performed if all locations on the wafer are measured thereby comprising at least four locations (col. 35, lines 35-45; col. 38, lines 28-45; col. 100, lines 20-35).

As for **claim 4**, Nikoonahad discloses modeling reflectance (col. 43, lines 45-67; col. 44, lines 1-5; col. 45, lines 35-40; col. 154, lines 5-11).

As for **claims 5-7**, Nikoonahad has a predetermined distance between the first and second locations (Fig. 5). As for being sufficiently small to ensure a plurality of properties are substantially identical between said first and second location, Fig. 8 suggests this for the substantially small dimensions being measured and the properties to be measured for the individual structures on the wafer (Fig. 8: 64, 62, 68).

As for **claims 8-10**, Nikoonahad suggests that patterned and non-patterned areas are measured for all locations on the sample may be inspected such as the streets and dies of a wafer (col. 35, lines 35-45; col. 37, lines 5-30); broadband measurements being of lower resolution and with larger areas of surface coverage than single wavelength measurements and single wavelength measurements both may be used in an integrated measurement system (col. 38, lines 5-25; col. 39, lines 22-67).

As for **claim 15**, Fig. 5 suggests that the system could comprise a combination of a reflectometer of single wavelength and a broadband, spectroscopic reflectometer (col. 9, line 10-20).

Art Unit: 2877

As for **claim 16**, Fig. 8 shows that critical dimensions differ between one location and another.

As for **claims 17-21**, the property's determined is of an exposed surface of the workpiece; the wafer has a plurality of layers on a substrate; reflectance of a dielectric layer and a reflectance of topmost layer are performed; metal layer reflectance is measured; ion concentration is determined; depths of junctions are determined; photoacoustic pulses are utilized (cols. 95-97; 99-101).

7. **Claims 28-34** are rejected under 35 U.S.C. 102(e) as being anticipated by **Nikoonahad et al. (6,694,284)**.

As for **claims 28-34**, Nikoonahad teaches a first measurement device such as spectroscopic reflectometer (lower resolution) may be combined with a reflectometer (higher resolution), a second measurement device, at a predetermined relationship from each other (Fig. 5; col. 9, lines 10-15; col. 38, lines 5-25; col. 39, lines 22-67) with an aligner (col. 36, lines 44-50; col. 151, lines 5-10) with a computer with software and modeling capabilities (col. 43, lines 45-67; col. 44, lines 1-5; col. 45, lines 35-40; col. 60, lines 20-45; col. 77, lines 49-67; col. 78, lines 1-20; col. 154, lines 5-11).

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2877

9. **Claims 11-14, 39-43** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nikoonahad et al. (6,694,284)** in evidence of **Wang et al. (6,734,968)** further in view of applicant's disclosure of prior related art.

As for **claims 11-14**, Nikoonahad with Wang disclose everything as above (see claim 1). In addition, for **claims 11-14 and 39-41**, Nikoonahad teaches that a combination of a reflectometer, single wavelength measurement, and spectroscopic reflectometer, multiple wavelength measurements, may be used and combined; whereas, there is separation of distance between the two measurement locations (Fig. 5; col. 9, lines 10-15). The laser for the reflectometer is collimated and coherent (col. 46, lines 3-6) and collimated (col. 38, lines 32-34). In addition, applicant's disclosure teaches that reflectometers use coherent, collimated, laser sources (page 13, line 7). As for smaller area of illumination for the laser versus the broadband Nikoonahad he is silent and is silent concerning the white light source being an incandescent bulb. However, applicant's disclosure teaches that spectroscopic reflectometers comprise incandescent bulb for white light sources and that these sources illuminate larger sample areas than laser light sources (page 13, lines 3-10). Therefore, it would be obvious to one skilled in the art that the spectroscopic reflectometer comprised an incandescent bulb that illuminated a larger area than the reflectometer, for incandescent bulb's are commonly used in spectroscopic reflectometers as a broadband source, and they commonly have larger spots of illumination than common laser reflectometers.

In addition, models of reflectance are produced at several wavelengths for critical dimensions and subsequently, models using predetermined amounts such as offsets are used (col. 43, lines 45-67; col. 44, lines 1-5; col. 45, lines 35-40; col. 60, lines 20-45; col. 154, lines 5-11).

Art Unit: 2877

As for **claim 42**, see **claim 41** above. In addition, Fig. 8 suggests that the locations between measurements need to be sufficiently small to ensure that a plurality of properties is substantially identical.

As for **claim 43**, it depends from a withdrawn claim, yet it was inadvertently restricted under Invention I, and subsequently, elected under invention I. It should have been restricted under invention II, and subsequently, withdrawn from consideration. At the present the claim is incomplete, and the Examiner will interpret the claim as depending from **claim 40** due to the limitation, "the predetermined amount." Therefore, as for **claim 43**, see **claim 40** above.

Nikoonahad is silent concerning a predetermined amount (see col. 60, lines 20-45). However, this is an optimal value for control parameters. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have the predetermined amount be 1 percent, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)

#### ***Fax/Telephone Numbers***

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.



Art Unit: 2877

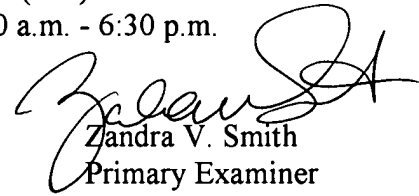
*Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 872-9306*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431. The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

gs

gs

June 13, 2004

  
Zandra V. Smith  
Primary Examiner  
Art Unit 2877